

**Taikichiro Mori Memorial Research Fund**  
**Graduate Student Researcher Development Grant Report**  
February 2013

**Research Project:** Comparative Study of Glacial Lake Changes on the Northern and Southern Slopes in the Everest Region, Himalaya Over Past Thirty-Two Years

**Researcher:** Wenbo Chen, D3

**Affiliation:** Graduate School of Media and Governance, Keio University

**Supervisor:** Prof. Wanglin Yan

**Email:** chenwb@sfc.keio.ac.jp

In Himalaya, many glaciers have retreated resulting in the expansion of glacial lakes since the second half of the 20th century. Such changes on glacial lakes are hazardous to communities and infrastructure of downstream because of its potential disaster such as glacial lake outburst flood (GLOF), and also influence regional eco-environment. The study area is located in Everest region of Himalaya including the northern slope in China and the southern slope in Nepal. The altitude ranges from 825 m to 8848 m high. In this study, temporal changes of glacial lakes were analyzed on the northern and the southern slopes in the Everest region of the Himalayas using satellite data and elevational data. Both the number and area of glacial lakes increased on the northern slope and the southern slope. The mean elevations of glacial lakes on the northern and southern slope were 4869 m and 4983 m high, respectively. However, the highest glacial lake was located on the northern slope, and faster growing glacial lake was located on the southern slope. The fieldwork on the northern slope of Himalaya was implemented from May to June in 2012. From the site investigation, it was obviously presented that the Rongbuk glacial lake, which is located on the foot of Mt. Everest (see photos taken by author), was connected to a bigger lake from several smaller ponds and its expansion trends to be continue. We recommend that these fast-expanding lakes be monitored and mapped regularly considering the potential danger of GLOF. The tendency of these glacial lakes to expand is possibly related to global climate change. Therefore, it is recommended that the relationship between the expansion of glacial lakes and climatic factors be studied further.



Figure 1 Panorama of Rongbuk Glacial Lake

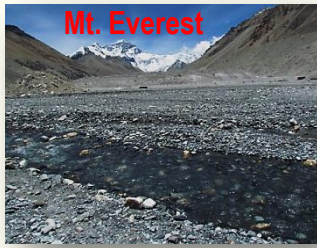


Figure 2 Stream in front of Rongbuk Glacier (left), Rongbuk Glacial Lake (right)

Conference and Symposium

- Chen W., Monitoring Glacial Lakes Changes in Himalaya Area During the Last Thirty Five Years, APN - CODATA Joint Workshop on Open Access to Global Change Data and Information in Asia-Pacific Region, Xining/Qinghai – Lhasa/Tibet, China, 23-31 May, 2012.
- Chen W., The Sketchbook of Tibetan Eco-Environment – The Himalayan Fieldwork in 2012, the 3rd Environmental Innovators Symposium, Yokohama, Japan, 21-22, Dec. 2012 (poster)

International Journal

- Chen, W., H. Fukui, T. Doko, X. Gu. Improvement of glacial lakes detection under shadow environment using ASTER data in Himalayas, Nepal. Chinese Geographical Science. 2012. DOI:10.1007/s11769-012-0584-3